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Research & Education

Study: Nurse practitioner full authority and the primary care supply

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The Economic Alliance for Michigan
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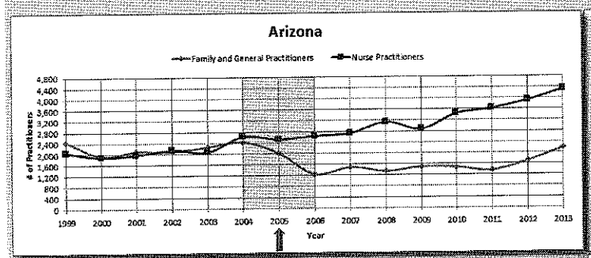
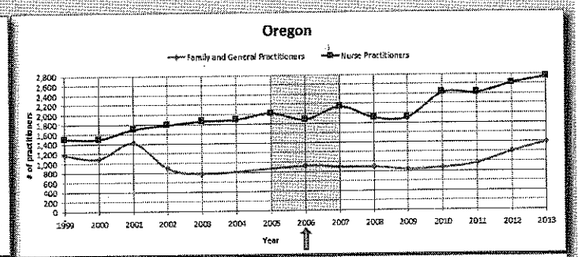
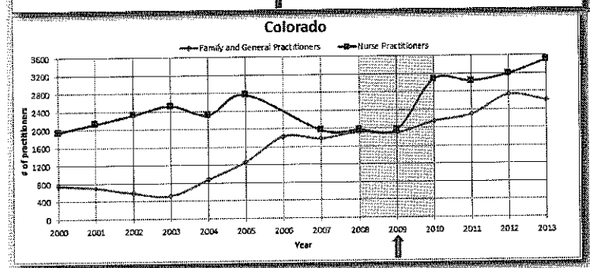
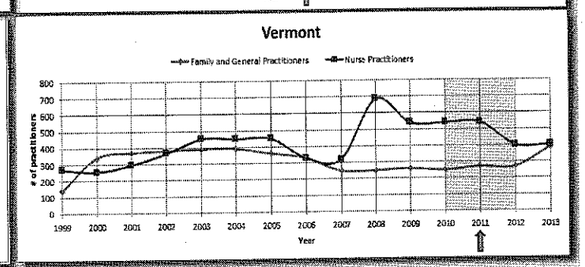
There are 19 states, and the District of Columbia, that have enacted into law and implemented full practice authority for advanced practice registered nurses (APRN) within their scope of practice. The District of Columbia, Alaska, Iowa, Maine, New Hampshire and New Mexico have each allowed independent practice and prescriptive authority for APRN's for over 15 years. Currently, Michigan is debating on legislation allowing APRN's full practice authority. In order to deduce how enacting such privileges for nurse practitioners affect the supply of actively practicing primary care physicians, a data set of the number of general and family practitioners by state has been collected using the Bureau of Labor Statistics as the source. This data was provided by the Occupational Employment Statistics database from 1999 to 2013. The five states and Washington D.C. with scope of practice legislation far preceding 1999 were thus excluded from this analysis. In addition, six states have recently granted full practice authority to APRN's within the past year. With a limited time lapse between law enactment and effective realization of these laws, data for the interval needed has not yet become available.

Subsequently, there are 8 states in this study used to observe the effect of initiating independent practice and prescriptive authority for nurse practitioners on the supply of primary care physicians. These states are Arizona, Colorado, Hawaii, North Dakota, Oregon, Vermont, Washington, and Wyoming. Please refer to the graphs: a scatter plot has been created for each of these states depicting the number of family and general practitioners actively employed in these states for each year between 1999 and 2013 (blue graph line). There does not appear to be a distinct relationship (positive or negative) between the number of family and general practitioners and any given year. This observation still applies when isolating the time frame at which state law was revised to allow full practice authority.









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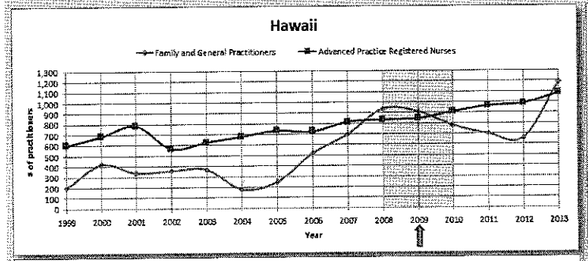
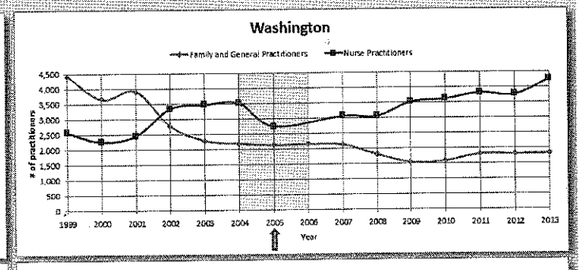
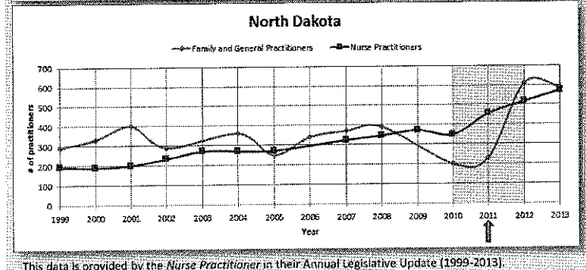
For Information on the impact APRN's have on cost and the primary care supply, please visit: www.eamonline.org

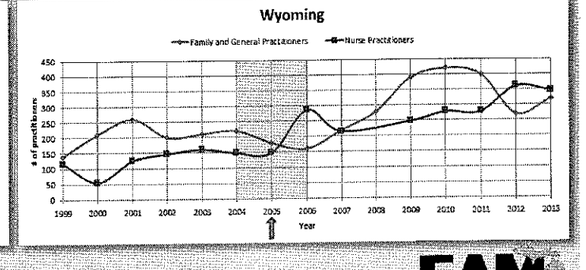
In the economy, expectations of change can lead to an adjustment in supply in any market in addition to the adjustments following the change. If a physician assumes legislation will be passed allowing a nurse practitioner in his/her state to practice independently and feels professionally disgruntled, the physician may choose to retire or move practice prior to legislation being passed. Therefore, the window observed for any effect on the number of primary care physicians is one year following new legislation, as well as, one year prior to new legislation allowing full practice authority. This duration for each state shows no pattern in the number of primary care physicians relative to allowing independent practice for nurse practitioners and does not indicate either a negative or positive relationship when observing the change to the supply in primary care physicians comprehensively.

The data demonstrates no adverse relationship between the populations of nurse practitioners and primary care physicians practicing in those states that have allowed an expansion of APRN scope of practice. What is clear is that the number of primary care practitioners grow in the time period after a scope bill is passed.









This data is provided by the *Nurse Practitioner* in their Annual Legislative Update (1999-2013).

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Full Practice Authority Legislation Across the Country

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Alaska
- July 21, 1984
- http://www.nursingald.com/uploads/publication/pdf/1040/Alaska_6_14.pdf

Arizona
- Arizona Administrative Code, Chapter 19 Board of Nursing, Article 5 Advanced Practice Registered Nursing, Section R4-19-508
- Effective November 12, 2005

Colorado
- http://cdn.colorado.gov/cs/Satellite?blobcol=urldata&blobheadername1=Content-Disposition&blobheadername2=Content-Type&blobheadervalue1=inline%3B+filename%3D%22Rules+and+Regulations+regarding+Liability+Insurance+for+Advanced+Practice+Nurses+Engaged+in+Independent+Practice.pdf%22&blobheadervalue2=application%2Fpdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1251832465396&ssbinary=true
- Effective: October 14, 2009

Connecticut
- Senate Bill #36 allowing APRN's independent practice signed into law May 8th, 2014
- Effective July 1st, 2014; section 20-87b(3)

District of Columbia
- http://dcclims1.dccouncil.us/lims/viewact.aspx
- B10-0598, A10-0394, L10-247
- Effective March 1995

Hawaii
- 2009 Act 169; Source doi: 10.1002/2327-6924.12116

Idaho
- IDAPA 23.01.01, Section 315.01
- Effective July 1st, 2013

Iowa
- https://iowaanp.enpnetwork.com/page/11281-legislative-history
- 1994

Maine
- Maine nurses advance primary practice. (1995). *Maine Nurse*, 1-2.
- Governor King signed into law L.D 948, An Act to Provide Greater Access to Health Care, now Public Law 379, effective on January 1, 1996

Minnesota
- 2014: SF 511 signed May 13, 2014, effective January 1st, 2015
- http://www.mprnews.org/story/2014/05/13/dayton-signs-bill-giving-nurses-more-authority?from=health

Montana
- 24.159.1406 APRN PRACTICE; Eff. 9/6/2013

Nevada
- 2013; Assembly Bill 170; Source doi: 10.1002/2327-6924.12116

New Hampshire
- Carpenter, L. (2009). NH advanced practice nurses see major victory in 2009! Joint Health Council repeal and new APRN designation. *Nursing News, 33*(4), 12.
- Achieved independence in 1993

New Mexico
- http://nursingald.com/uploads/publication/pdf/855/NM7_13.pdf
- Independent since 1993

North Dakota
- 2011; Source doi: 10.1002/2327-6924.12116

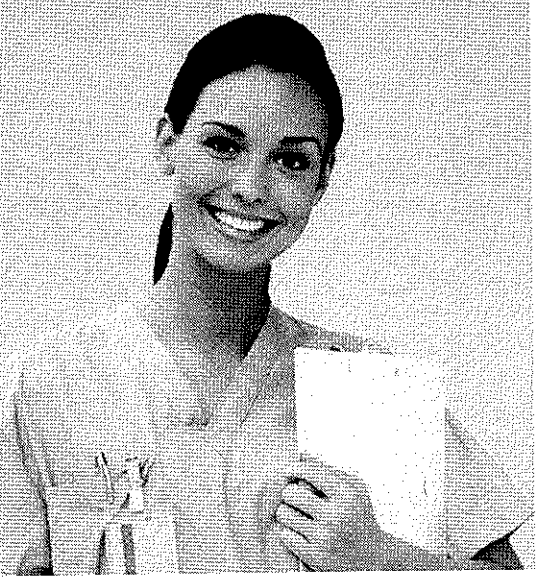
Oregon
- https://www.oregonlegislature.gov/citizen_engagement/Reports/2005SummaryOfLegislation.pdf
- 18th Annual Legislative Update. A comprehensive look at the legislative issues affecting advanced nursing practice
- Senate Bill 460-B and Senate Bill 880 allow for independent practice and prescriptive authority in passed in 2005, effective January 1 2006

Rhode Island
- The Nurse Practitioner; 26th Annual Legislative Update: Progress for APRN authority to practice
- http://webserver.rilin.state.ri.us/BillText13/SenateText13/S0614.pdf
- June 2013

Vermont
- http://www.leg.state.vt.us/database/status/textonly.cfm?Bill=H.0420&Session=2012
- Effective June 1, 2011

Washington
- House Bill 1479 of 2005 gives ARNP's independent prescriptive authority making them fully independent practitioners
- http://search.leg.wa.gov/search.aspx#document
- Effective 2005

Wyoming
- Senate Bill 0093 eliminates collaborative agreement requirements with a physician
- Signed March 3rd, 2005, Effective July 1st, 2005



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APRN Cost-Effectiveness Studies Summary

Page 1

Study	Key Findings
Naylor, M.D. and Kurtzman, E.T. "The Role of Nurse Practitioners in Reinventing Primary Care," *Health Affairs*, May 2010, Vol. 29, No. 5, pp. 893-99.	In a review of studies comparing the cost of primary care when delivered by NPs and Physician assistants (PAs) to care provided by MDs, researchers found that, in studies where NPs and Pas assumed care roles previously occupied by MDs, "substitution of visits to physicians by visits to NPs and PAs achieved savings in the first year of implementation."
Kelley, R. (2009, October). *Where can $700 billion in waste be cut annually from the U.S. health care system?* Thomson-Reuters; ECRI Institute.	Inefficient use of professional staff extenders such as nurse practitioners and physician assistants result in significant waste. Many provider process inefficiencies are similar to those experienced in other types of organizations, such as resource scheduling; appropriate mix of general lower-cost and specialized higher-cost resources; facility or equipment utilization or throughput; and timing and coordination of multiple procedures for a single patient to minimize downtime.
Laurant, L. M., Reeves, D., Hermens, R., Braspenning, J., Gori, R., & Sibbald, B. (2006). Substitution of doctors by nurses in primary care. *The Cochrane Database of Systematic Reviews*, issue 1.	The findings suggest that appropriately trained nurses can produce as high quality care as primary care doctors and achieve as good health outcomes for patients.
Aigner, M. J., Drew, S., & Phipps, J. (2004). A comparative study of nursing home resident outcomes between care provided by nurse practitioners/physicians versus physicians only. *Journal of the American Medical Directors Association*, 5, 16–23.	The level of care provided for patients by the two groups of providers was basically the same and of similar quality; however, the nurse practitioner/physician group patients were seen more often. Increased visits by nurse practitioners are assumed to result in time and cost savings for physicians and improved access to care for patients.
Carter, M. W., & Porell, F. W. (2005). Vulnerable populations at risk of potentially avoidable hospitalizations: The case of nursing home residents with Alzheimer's disease. *American Journal of Alzheimer's Disease and Other Dementia*, 20, 349.	The findings suggest that nursing home residents with ADRD are more likely to be hospitalized for certain ACS conditions, including gastroenteritis and kidney/ urinary tract infections. Availability of increased registered nurse staffing levels and on-site nurse practitioners appears to attenuate this risk.
Ettner, S. L., Kotlerman, J., Afifi, A., Vazirani, S., Hays, R. D., Shairo, M., et al. (2006). An alternative approach for reducing the costs of patient care: A controlled trial of the multi-disciplinary doctor-nurse practitioner (MDNP) model. *Medical Decision Making*, 26(1), 9–17.	Hospitals adapt to changing market conditions by exploring new care models that allow them to maintain high quality while containing costs. The authors examined the net cost savings associated with care management by teams of physicians and nurse practitioners, along with daily multidisciplinary rounds and post discharge patient follow-up.
Paez, K.A. and Allen, J.K. "Cost-Effectiveness of Nurse Practitioner Management of Hypercholesterolemia Following Coronary Revascularization," *Journal of the American Academy of Nurse Practitioners*, September 2006, Vol. 18, No. 9, pp. 436-44.	A study comparing NP versus MD management of post-revascularization hypercholesterolemia found that patients managed by NPs are more likely to comply with the prescription regimen and achieve their health goals at a lower cost.
The Florida Legislature (2010) Office of Program Policy Analysis and Government Accountability, "Expanding Scope of Practice for Advanced Registered Nurse Practitioners, Physician Assistants, Optometrists, and Dental Hygienists" Retrieved from http://www.floridanurse.org/arnpcorner/ARNPDocs/OPPAGAScopeofPracticeMemo.pdf.	Estimates of potential cost savings from expanding scope of practice in primary care range from $7 million to $44 million annually for Medicaid, $744,000 to $2.2 million for state employee health insurance, and $339 million across Florida's entire health care system.
Weinberg, Micah, PhD, Kallerman, Patrick "Full Practice Authority for Nurse Practitioners Increases Access and Controls Cost" The Bay Area Council, April 2014. Available at: http://www.bayareaeconomy.org/media/files/pdf/BACEI_NPs_CA_Final.pdf.	Allowing nurse practitioners (NP) to practice to the full extent of their education and training could save the state (California) $1.8 billion on preventative care visits alone over 10 years while increasing the number of preventative care visits by 2 million per year.
Eibner, C.E., Hussey, P.S., Ridgely, M.S., et al. "Controlling Health Care Spending in Massachusetts: An Analysis of Options," *RAND Corporation*, August 2009. Available at: www.rand.org/pubs/technical_reports/TR733.html (last accessed January 11, 2011).	Using Massachusetts-specific MEPS data, a recent RAND study estimated NP and PA visits are 35 percent less expensive than physician visits. They estimate that if scope of practice laws were expanded and the number of NPs and PAs visits increased, Massachusetts could save between $4.2 and $8.4 billion over the course of the next ten years.

Research

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Education

APRN Cost-Effectiveness Studies Summary

Page 2

Study	Key Findings
Julie Stanik-Hutt, PhD, ACNP-BC, Robin P. Newhouse, PhD, NEA-BC, Kathleen M. White, PhD, NEA-BC, Meg Johantgen, PhD, RN, Eric B. Bass, MD, MPH, George Zangaro, PhD, RN, Renee Wilson, MS, Lily Fountain, MS, CNM, Donald M. Steinwachs, PhD, Lou Heindel, DNP, CRNA, and Jonathan P. Weiner, DrPH. The Quality and Effectiveness of Care Provided by Nurse Practitioners.	The evidence identified in this review supports the premise that outcomes of NP-provided care are equivalent to those of physicians. Thus the question of the comparability of NP/MD quality, safety, and effectiveness of care is answered, to a very considerable degree, by this review.
Mehrotra, A., Wang, M.C., Lave, J.R., et al. "Retail Clinics, Primary Care Physicians, And Emergency Departments: A Comparison of Patients' Visits," *Health Affairs*, September/ October 2008, Vol. 27, No. 5, pp. 1272-282.	In a cross-sectional comparison of retail clinics (staffed almost exclusively by NPs and PAs), researchers found that the cost of care provided in retail clinics is far lower than care provided in primary care physician practices and emergency departments, while quality remained constant.
Chenoweth, D., Martin, N., Pankowski, J., et al. "A Benefit-Cost Analysis of a Worksite Nurse Practitioner Program: First Impressions," *Journal of Occupational and Environmental Medicine*, November 2005, Vol. 47, No. 11, pp. 1110-116.	In an analysis of an on-site NP program launched by a U.S. metal and plastic manufacturing firm covering 4,284 employees and their dependents, researchers observed substantial reductions in annual health care costs ($1.3 million) as a result of the investment ($83,000), yielding a cost-benefit ratio of 1:15.
Rosenblatt, R.A., Dobie, S.A., Hart, L.G., et al. "Interspecialty Differences in the Obstetric Care of Low-Risk Women," *American Journal of Public Health*, March 1997, Vol. 87, No. 3, pp. 344-51.	A random sampling of providers delivering pre and perinatal care to low-risk women in Washington State found that certified nurse midwives used 12.2% fewer resources than obstetricians, with comparable outcomes in terms of number of live births and birth weight. Researchers attributed the lower resource use to reduced rates of Caesarean sections, labor induction, and epidural anesthesia.
Coddington J. (2010). Quality of Care and Policy Barriers to Providing Health Care at a Pediatric Nurse–Managed Clinic. Journal of Pediatric Healthcare, 24 (5):e9.	Clinics run by nurse practitioners create cost savings associated with reduced use of emergency rooms, urgent care centers, hospitals, and emergency medical services.
Hansen-Turton, T. (2005). The Nurse-Managed Health Center Safety Net: a Policy Solution to Reducing Health Disparities. Nursing Clinics of North America, 40, 729-738.	Nurse-managed clinic patients have higher rates of generic medication fills at pharmacies, and lower rates of hospitalizations when compared to patients of similar providers.
Perryman Group (2012). The economic benefits of more fully utilizing advanced practice registered nurses in the provision of care in Texas. Author: Waco, TX. Accessed March 20, 2013 at http://www.texasnurses.org/associations/8080/files/PerrymanAPRN_UltilizationEconomicImpactReport.pdf.	Analyzed the potential economic impact that would be associated with greater use of NPs and other advanced practice nurses, projecting over $16 billion in immediate savings which would increase over time.
Spitzer, R. (1997). The Vanderbilt experience. Nursing Management, 28(3), 38-40.	NPs practicing in Tennessee's state-managed managed care organization (MCO) delivered health care at 23% below the average cost associated with other primary care providers, achieving a 21% reduction in hospital inpatient rates and 24% lower lab utilization rates compared to physicians.
Cowan, M.J., Shapiro, M., Hays, R.D., Afifi, A., Vazirani, S., Ward, C.R., et al. (2006). The effect of a multidisciplinary hospitalist physician and advanced practice nurse collaboration on hospital costs. The Journal of Nursing Administration, 36(2), 79-85.	Collaborative NP/physician management was associated with decreased length of stay and costs and higher hospital profit, with similar readmission and mortality rates.
Larkin, H. (2003). The case for nurse practitioners. Hospitals and Health Networks, (2003, Aug.), 54-59. Newhouse, R. et al (2011). Advanced practice nurse outcomes 1999-2008: A systematic review. Nursing Economic$, 29 (5), 1-22.	The introduction of an NP model in a health system's neuroscience area resulted in over $2.4 million savings the first year and a return on investment of 1600 percent; similar savings and outcomes were demonstrated as the NP model was expanded in the system.

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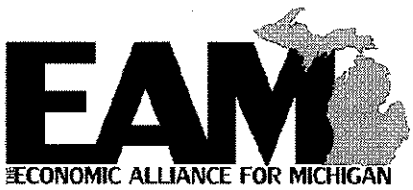

Education

APRN Quality Studies Summary

Page 1

Study	Key Findings
Traczynski, Jeffrey, and Victoria Udalova, *Nurse Practitioner Independence, Health Care Utilization, and Health Outcomes*, paper presented at the fifth biennial conference of the American Society of Health Economists, Los Angeles, June 22–25, 2014.	With full independent practice and prescriptive authority, subjective access- to-care measures (ease of getting checkups, providers taking time with and listening to patients, travel time to appointments) improve by roughly 10%– 20%. The percentage of the population with routine checkups in the past year would be 3.1 points higher in the 2 years after NP independence and 7.4 points higher 11 years after. They also find a 22% reduction in ED visits for non-ACS conditions in independent states. They do not find a differential effect in rural versus urban areas.
Naylor, M.D. and Kurtzman, E.T. "The Role of Nurse Practitioners in Reinventing Primary Care," *Health Affairs*, May 2010, Vol. 29, No. 5, pp. 893-99.	In a review of studies comparing the primary care provided by NPs to primary care provided by physicians (MDs), researchers found that patients of both groups had comparable health outcomes. NPs were found to outperform MDs in measures of consultation time, patient follow-up, and patient satisfaction.
Horrocks, S., Anderson, E., and Salisbury, C. "Systematic Review of Whether Nurse Practitioners Working in Primary Care Can Provide Equivalent Care to Doctors," BMJ, April 6, 2002, Vol. 324, No. 7341, pp. 819-23 *AND* Laurant, M.G., Hermens, R.P., Braspenning, J.C., et al. "An Overview of Patients' Preference for, and Satisfaction with, Care Provided by General Practitioners and Nurse Practitioners," Journal of Clinical Nursing, October 2008, Vol. 17, Issue 20, pp. 2690-698.	Two recent international systematic reviews report no differences between patients treated by NPs and MDs in terms of health outcomes, type of care provided, or resources used. They also found patients seeing NPs were more satisfied and had longer consultations.
Naylor M, Brooten D, Jones R, et al. Comprehensive discharge Planning for the hospitalized elderly. Ann Inter Med 1994 120:999-1006.	Conducted a randomized clinical control trial with 276 patients and 125 caregivers to show the effects of a comprehensive discharge planning protocol. The discharge planning protocol was specifically designed for elderly medical and surgical patients and implemented by a gerontological CNS. From the initial discharge until 6 weeks after discharge, the medical intervention group had fewer readmissions, fewer total days of re-hospitalization, lower readmission charges, and lower charges for all health care services after discharge compared to the control group and the surgical intervention group.
Jackson, D.J., Lang, J.M., Swartz, W.H., et al. "Outcomes, Safety, and Resource Utilization in a Collaborative Care Birth Center Program Compared with Traditional Physician-Based Perinatal Care," American Journal of Public Health, June 2003, Vol. 93, No. 6, pp. 999-1006.	A case control study comparing care at collaborative management birth centers (where CNMs provide 95% of prenatal and birthing care to low-risk women) and traditional birthing centers (managed by MDs at hospital clinics or private practice) found that, for low-risk women, outcomes were equivalent. The study also found that the collaborative centers required fewer operative deliveries and used fewer medical resources.
Hatem, M., Sandall, J., Devane, D., et al. "Midwife-led Versus Other Models of Care for Childbearing Women," Cochrane Database of Systematic Reviews, October 2008, Issue 4.	A meta-analysis of 11 trials comparing midwife-led (i.e. CNM) pregnancy and birthing care with traditional care models concluded that CNM care is associated with reduced rates of fetal loss before 24 weeks gestation, reduced antenatal hospitalization, shorter newborn hospital stays, and an increased sense of control during labor, without any reduction in maternal or child health.
Nurse Practitioners as Primary Care Providers within the VA, Carol Fletcher PhD, Laurel Copeland PhD, Julie Lowery PhD, and Pamela Reeves MD 2011.	The study examined the perceptions of APRNs and physicians regarding APRN roles as primary care providers within the Department of Veterans Affairs. Findings suggested comparable outcomes for those treated for diabetes or hypertension. They further found that physicians underestimated what care APRNs performed independently.
CNM Outcomes, Johantgen, M. et al 2012 Comparison of Labor and Delivery Care Provided by Certified Nurse-Midwives and Physicians.	Similar results were found between CNMs and physicians for many infant outcomes but perineal laceration occurrence was lower and breast-feeding rates higher for the CNM.

Research

Education

APRN Quality Studies Summary

Page 2

Study	Key Findings
(2002) *BMJ* 324, 819; *Horrocks S, Anderson E, Salisbury C.. Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. Apr 6 –23.*	Nurse practitioner primary care at first point of contact improves patient satisfaction and quality of care compared with physician care, with no difference in health outcomes. Nurse practitioners also had longer consultation times and did more investigations.
Lenz, E.R., Mundinger, M.O., Kane, R.L., et al. "Primary Care Outcomes in Patients Treated by Nurse Practitioners or Physicians: Two-Year Follow-Up," *Medical Care Research and Review*, September 2004, Vol. 61, No. 3, pp. 332-51.	In a randomized trial, researchers found that primary care outcomes of NPs in ambulatory care settings are comparable to MDs when NPs have the same level of authority, responsibilities, productivity and administrative requirements. A two-year follow up found no significant variation in health outcomes, health services utilization, or patient satisfaction between patients from the original study receiving primary care from NPs versus MDs.
Topp R, Tucker D, Weber C. Effect of clinical case manager/clinical nurse specialist patients hospitilized with congestive heart failure. Nurs Case Manag 1998 3(4):140-5.	Conducted a retrospective chart review on 491 hospitalized congestive heart failure patients over a 12-month period. Results indicated that length of stay and hospital charges were significantly less in patients who were case-managed by a CNS.
MacDorman, M.F. and Singh, G.K. "Midwifery Care, Social and Medical Risk Factors, and Birth Outcomes in the USA," Journal of Epidemiology and Community Health, May 1998, Vol. 52, No. 5, pp. 310-17.	A cross-sectional analysis of all U.S. births in 1991 attended by either a physician or CNM found that, among singleton, low risk vaginal births, outcomes were significantly better under CNM care. After adjusting for risk factors and socioeconomic status, CNM-attended births had a 19% reduced risk of infant mortality, a 33% reduced risk of neonatal mortality, and an average birth weight that was 37 grams greater, compared to physician-attended births.
Avorn L, Everitt DE, Baler MW. The neglected medical history and theraputic choices for abdominal pain: a nationwide study of 799 physicians and nurses. Arch Intern Med 1991; 141:694-98.	More than one-third of the physicians chose to initiate therapy without seeking a relevant history. Nearly half of all physicians indicated that a prescription would be the single most effective therapy; 65% recommended a histamine antagonist. By contrast, only 19% of NPs opted to treat without taking further history; the nurse sample asked an average of 2.6 questions vs. 1.6 for physicians. These findings suggest that NPs ask more questions and were less likely to recommend prescription medication when not indicated by clinical circumstances.